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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,945	03/05/2002	Chun-Chi Lee	JCLA6897	7088
23900	7590	06/01/2005	EXAMINER	
J C PATENTS, INC. 4 VENTURE, SUITE 250 IRVINE, CA 92618			MITCHELL, JAMES M	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

8m

<b>Office Action Summary</b>	<b>Application No.</b> 10/091,945	<b>Applicant(s)</b> LEE ET AL.	
	<b>Examiner</b> James M. Mitchell	<b>Art Unit</b> 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 March 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This office action is in response to the amendment filed March 9, 2005.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 7, 8, 10, 13, and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Karnezos et al. (U.S. 6,020,637) in combination with Ahn et al. (U.S. 6,379,982).

Karnezos (Fig 4, 5A) discloses a cavity down ball grid array packaging structure, comprising: a heat spreader (110); a ground substrate (160) bonded onto the heat spreader without any sandwiched layer except adhesive material (127), the ground substrate having an opening exposing the heat spreader; a substrate bonded to the ground substrate, wherein the substrate comprises at least an insulating layer (tape portion of 150), a patterned wiring layer (118) forming portion of pad, and a via (119) formed through the insulating layer and the patterned wiring layer and electrically connected to the ground substrate, and the patterned wiring layer comprises at least a ball pad, a first contact pad, and a first ground pad electrically connected to the via (all connected to device that's grounded) with the contact pad and ball pad separated from the via; a chip (112) having an active surface (contact with wire, 126) and a corresponding back surface, the chip bonded into the opening of the ground substrate

and onto the heat spreader via the back surface thereof the chip including at least a second contact pad and a second ground pad, the second contact pad and the second round pad positioned on the active surface of the chip; a first conductive wire (126) connecting the first contact pad with the second contact pad; a second conductive wire connecting the second ground pad with the ground substrate; an encapsulant material (122) encapsulating the chip, the first and second conductive wires; and a plurality of solder balls (120) attached to the ball pad and the first ground pad (not labeled); wherein the via contacts edges of the first ground pad (pad in contact with ball); and the via is filled , such that it lays over a portion of pad (i.e. side edges of part of pads via goes through pad) and therefore overlays with a portion of the ground conductive wiring; with portions of the ball discrete and separate from the via and therefore apart..

Karnezos does not appear to show conductive material filled in the first ground pad spaced apart from the via.

However Sherman (Fig 1) utilizes pads spaced from vias.

It would have been obvious to one of ordinary skill in the art to modify the pads and vias of Karnezos, such that they are separated from the via in order to simplify trace routing as taught by Sherman (U.S 5,784,262).

### ***Response to Arguments***

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

In an effort to expedite prosecution of this application, examiner has addressed arguments that may still be applicable.

Applicant contends that the conductive material does not show conductive material filled in a via, which overlaps portion of the ground wiring, examiner disagrees.

However, because the feature is not claimed the argument is deemed moot.

Applicant also contends the conductive material does not show conductive material filled in a via, which overlays portion of the ground wiring, examiner disagrees

Because the wiring makes up portion of the pad and the plain ordinary meaning of overlay is that a material need only lay over or be spread over a surface, a via going through conductive wiring/pad that is filled with conductive material lays over side portions of the wiring and is therefore within the broad scope of overlay.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art in Huang et al. (U.S 6,020,637) discloses the use of a conductive material overlaying a top surface of a pad that opposite and parallel to surface of the pad in contact with a tape to form ball-bonding structures.


Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**CARL WHITEHEAD, JR.**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**

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Jmm  
May 4, 2005